

Amendments to the Claims

This listing of claims will replace all prior versions and listings of claims in the application.

1. – 37. (Canceled)

38. (Currently amended) An automated system for facilitating the implementation of behavioral therapy that uses information indicative of a subject's wake/sleep state to treat subjects suffering from insomnia including difficulty falling asleep, difficulty staying asleep, or waking too early, comprising:

passive wake/sleep determination means for producing information indicative of the subject's wake/sleep state; and

means for implementing the behavioral therapy utilizing the wake/sleep information to treat the subjects suffering from insomnia chosen from the group consisting of stimulus control therapy, sleep restriction therapy, relaxation therapy, and combinations of two or more of stimulus control therapy, sleep restriction therapy, or relaxation training.

39. (Canceled)

40. (Previously presented) The system of claim 39 including means for choosing the behavioral therapy to be implemented for a subject based on the subject's personal wake/sleep information.

41. (Previously presented) The system of claim 38 in which the passive wake/sleep determination means uses information taken from the group consisting of: EEG, EKG, EMG, EOG, actigraphy, body movement, galvanic skin response, respiratory changes, or eye movements, and combinations of two or more of EEG, EKG, EMG, EOG, actigraphy, body movement, galvanic skin response, respiratory changes, or eye movements.

42. (Previously presented) The system of claim 38 including drug therapy in conjunction with the behavioral therapy.

43. (Previously presented) The system of claim 38 in which active means for determining the wake/sleep state are used to supplement the passive wake/sleep determination means.

44. (Previously presented) The system of claim 38 in which the behavioral therapy is stimulus control therapy including means for implementing the stimulus control therapy using the following rules:

- a) never alert a subject while they are asleep,
- b) alert a subject only when at least a first predetermined number of contiguous of wake epochs are achieved, and
- c) if any sleep of at least a second predetermined number of contiguous epochs is achieved, designate the subject in a sleep maintenance mode and if any sleep of at least the second predetermined number of contiguous epochs is not achieved, designate the subject not in a sleep maintenance mode whereby
 - if the subject is in a sleep maintenance mode, examine a past third predetermined number of epochs and if the subject was awake for at least a fourth predetermined number of epochs out of the past third predetermined number of epochs, alert the subject, but
 - if the subject is not in a sleep maintenance mode and if there is no sleep of at least a fifth predetermined number of contiguous epochs within a first period of trying to fall asleep, then alert the subject upon a lapse of the first period; and
 - if the subject is not in a sleep maintenance mode and there is a contiguous sleep period contained within the first period of trying to fall asleep that is greater than or equal to the fifth predetermined number of epochs but less than the second predetermined number of epochs, then inhibit the alert for an additional period.

45. (Currently amended) The ~~method~~ system of claim 44 in which an epoch is about 30 seconds, the first predetermined number of contiguous wake epochs is 2, and the second predetermined number of contiguous epochs is 20 epochs, the third predetermined number of epochs is 30 epochs, the fourth predetermined number of epochs is 28 epochs; the fifth predetermined number of contiguous epochs is 10 epochs; the first period is 40 epochs, and the additional period is 20 epochs.

46. (Previously presented) The system of claim 38 in which the behavioral therapy is optimized for each subject based upon the subject's wake/sleep information.

47. (Currently amended) An apparatus for facilitating the implementation of behavioral therapy for treating subjects suffering from insomnia including difficulty falling asleep, difficulty staying asleep, or waking too early, comprising:

means for processing information taken from the group consisting of: EEG, EKG, EMG, EOG, actigraphy, body movement, galvanic skin response, respiratory changes, eye movements and combinations of two or more thereof to determine the subject's wake/sleep state; and

means for implementing the behavioral therapy utilizing the wake/sleep state information to treat the subjects suffering from insomnia chosen from the group consisting of stimulus control therapy, sleep restriction therapy, relaxation therapy, and combinations of two or more of stimulus control therapy, sleep restriction therapy, or relaxation training.

48. (Previously presented) The apparatus of claim 47 in which the behavioral therapy is stimulus control therapy in which program parameters are defined and stimulus control therapy rules are applied to implement the therapy comprising:

means for determining whether the subject should get out of the bed in accordance with the stimulus control therapy; and

means for alerting the subject to leave the bed in accordance with the rules of the stimulus control therapy if a determination is made.

49. (Previously presented) The apparatus of claim 47 in which the behavioral therapy is sleep restriction therapy in which program parameters are defined and sleep restriction therapy rules are applied to implement the therapy comprising:

means for calculating the program parameters including a sleep period for the upcoming sleep session based on previously acquired wake/sleep state information in accordance with the rules of the sleep restriction therapy;

means for determining whether the subject has completed the sleep period; and

means for displaying the calculated program parameters to the subject for the upcoming sleep session.

50. (Previously presented) The apparatus of claim 47 in which the behavioral therapy is chosen from the group consisting of stimulus control therapy, sleep restriction therapy, relaxation therapy, and combinations of two or more of stimulus control therapy, sleep restriction therapy, or relaxation training.

51. (Previously presented) The apparatus of claim 47 including means for permitting the subject to review and adjust system settings chosen from the group consisting of time, age, sleep goals, alert preferences, language, setup parameters, and display preferences.

52. (Previously presented) The apparatus of claim 47 in which the behavioral therapy is optimized for each subject based upon the subject's wake/sleep state information and/or wake/sleep state history.

53. (Previously presented) The apparatus of claim 47 including means permitting the subject to review information previously acquired by the apparatus.

54. (Previously presented) The apparatus of claim 47 including means for computing the subject's sleep statistics based on the subject's previous wake/sleep state history.

55. (Previously presented) The apparatus of claim 47 in which information as to whether the subject is in bed or not is acquired along with the wake/sleep state information.

56. (Previously presented) The apparatus of claim 55 in which means are provided for the turning off any alert and displaying the subject's current sleep statistics when a determination is made that the subject is no longer in bed.

57. (Previously presented) The apparatus of claim 55 in which means are provided for the turning off any alert and for providing the subject with sleep instructions when a determination is made that the subject is no longer in bed.

58. (Previously presented) The apparatus of claim 48 in which the alerting means are chosen from the group consisting of: a text display of warning conditions, text display of instructions or information, a display backlight, a blinking light, an audible indication, a tactile indication, a synthesized or recorded voice, a low level electrical stimulus and an aroma generated by appropriate device.

59. (Previously presented) The apparatus of claim 47 including means for permitting the subject to specify a predetermined wakeup time.

60. (Previously presented) The apparatus of claim 48 including subject-controlled means for canceling the alerting means.

61. (Previously presented) The apparatus of claim 47 including a visual or audible presentation of instructions or information.

62. (Previously presented) The apparatus of claim 47 including means for providing an indication to the subject after the subject has been in bed for a recommended length of time.

63. (Previously presented) The apparatus of claim 49 including means for enabling the subject to review and adjust the program parameters after display of such parameters for an upcoming sleep session.

64. (Previously presented) The apparatus of claim 47 in the form of a single portable unit wearable by the subject.

65. (Previously presented) The apparatus of claim 47 including means for calculating a time interval corresponding to the highest likelihood of being able to sleep to assist the subject in planning the subject's sleep.

66. (Previously presented) The apparatus of claim 65 including means for informing the subject as the subject approaches the time interval corresponding to the highest likelihood of sleeping.

67. (Previously presented) The system of claim 40 including means for obtaining information indicative of the subject's wake/sleep state prior to the beginning of treatment.

68. (Previously presented) The system of claim 40 including means for obtaining information indicative of the subject's wake/sleep state during the course of treatment.

69. (Previously presented) The system of claim 38 in which behavioral prompts in the form of alerts or messages are generated in accordance with the behavioral therapy being implemented.

70. (Previously presented) The system of claim 38 in which the subject's wake/sleep states, in-bed status, and other sleep behaviors are stored and used to update the parameters for the behavioral therapy being implemented.

71. (Previously presented) An automated system for facilitating the implementation of stimulus control therapy that uses information indicative of a subject's wake/sleep state to improve the subject's sleep or sleep hygiene, including subjects with insomnia or other sleep complaints, comprising:

passive wake/sleep determination means for producing information indicative of the subject's wake/sleep state; and

means for implementing the stimulus control therapy utilizing the wake/sleep information and applying the following rules:

a) never alert a subject while they are asleep,

b) alert a subject only when at least a first predetermined number of contiguous of wake epochs are achieved, and

c) if any sleep of at least a second predetermined number of contiguous epochs is achieved, designate the subject in a sleep maintenance mode and if any sleep of at least the second predetermined number of contiguous epochs is not achieved, designate the subject not in a sleep maintenance mode whereby

if the subject is in a sleep maintenance mode, examine a past third predetermined number of epochs and if the subject was awake for at least a fourth predetermined number of epochs out of the past third predetermined number of epochs, alert the subject, but

if the subject is not in a sleep maintenance mode and if there is no sleep of at least a fifth predetermined number of contiguous epochs within a first period of trying to fall asleep, then alert the subject upon a lapse of the first period; and

if the subject is not in a sleep maintenance mode and there is a contiguous sleep period contained within the first period of trying to fall asleep that is greater than or equal to the fifth predetermined number of epochs but less than the second predetermined number of epochs, then inhibit the alert for an additional period.

72. (Currently amended) The ~~method~~ system of claim 71 in which an epoch is about 30 seconds, the first predetermined number of contiguous wake epochs is 2, and the second predetermined number of contiguous epochs is 20 epochs, the third predetermined number of epochs is 30 epochs, the fourth predetermined number of epochs is 28 epochs; the fifth predetermined number of contiguous epochs is 10 epochs; the first period is 40 epochs, and the additional period is 20 epochs.

73. (Previously presented) An automated system for facilitating the implementation of stimulus control therapy that uses information indicative of a subject's wake/sleep state to improve the subject's sleep or sleep hygiene, including subjects with insomnia or other sleep complaints, comprising:

means for processing information taken from the group consisting of: EEG, EKG, EMG, EOG, actigraphy, body movement, galvanic skin response, respiratory changes, eye movements and combinations of two or more thereof to determine the subject's wake/sleep state and to acquire an alert as to whether the subject is in bed or not; and

means for implementing the behavioral therapy utilizing the wake/sleep state information and the in bed information.

74. (Previously presented) The apparatus of claim 73 in which means are provided for the turning off any alert and displaying the subject's current sleep statistics when a determination is made that the subject is no longer in bed.

75. (Previously presented) The apparatus of claim 73 in which means are provided for the turning off any alert and for providing the subject with sleep instructions when a determination is made that the subject is no longer in bed.

76. (Previously presented) An automated system for facilitating the implementation of behavioral therapy that uses information indicative of a subject's wake/sleep state to improve the subject's sleep or sleep hygiene, including subjects with insomnia or other sleep complaints, comprising:

passive wake/sleep determination means for producing information indicative of the subject's wake/sleep state;

means for implementing the behavioral therapy utilizing the wake/sleep information; and

means for storing the subject's wake/sleep states, in-bed status, and other sleep behaviors and using the stored information to update the information for the behavioral therapy being implemented.